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I.

A DISSERTATION ON THE CONTAGIOUS-
NESS OF TYPHOUS FEVER.

*Read before the Medical Society of
New Hampshire, at their Annual
Meeting, June 2d, 1829.*

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THE Dissertation which we publish below, with the annexed note, was received a few days since from a distinguished medical friend, and is esteemed a highly valuable communication.

To the Editor of the Boston Medical and
Surgical Journal.

Sir,—The question touching the contagion or non-contagion of typhous fever, has been ably discussed in a paper read before the N. H. Med. Soc., and perused by one of your subscribers, who obtained permission of the author to present it to you for publication in your useful Journal. Should you deem the subject worthy of a place in your periodical, it is now submitted to your disposal by

A SUBSCRIBER.

Boston, Oct. 19, 1830.

It has been observed by a distinguished writer, that to think is to theorise. One less known to the world, by way of apology for promulgating some cobweb-spun theory, has gravely stated the converse of this proposition, and, according to him, to theorise is to

think. If this last were true, the professors of the healing art might justly claim for themselves the title of a most thinking race of men ; for the records of Medicine, from its earliest dates, present a succession of theories, each in its turn guiding the opinions and practice of many of the followers of the Art, and each giving way to the greater and growing popularity of some new theory, destined, like its predecessor, to flourish and to fade. Along the course of the great systems, that have thus for a while been wholly or in part predominant, are strewed the wrecks of many lesser fond imaginations, destined, in the minds of their authors, to contest with the sovereigns the palm of empire, or, merely imitative of their greatness, to explain the nature or intimate cause of some single disease or class of diseases, the operation of some particular agent on the animal system, or the manner in which some of its functions were performed in health or disturbed in sickness.

Of these smaller beings of theory, some have for a time held honorable career by the side of their great compeers, many have not outlived their authors, still more have had but an ephemeral existence, and a countless number have dropped like abortions into this breathing world, alike unnoticed and unknown.

As all exercise of the mind must

be considered thinking, it may be admitted, in the terms of the proposition, that "to theorise is to think;" and yet, however paradoxical it may seem, it may be affirmed that to theorise is not necessarily to exercise thought. Thought implies the use of care, deliberation, research, and judgment; while theorising, as theories have often been framed, is frequently very deficient in these essential qualifications, and much more a work of the imagination, than of that principle which may peculiarly be called the thinking power of the mind.

All human knowledge has been of gradual growth, and in all its attainments error has been mingled with truth. Imperfect observations have been supplied by bold suppositions; causes have been gratuitously assumed to account for effects; effects have been taken for causes, and general conclusions have been drawn from partial views. To many, anything has seemed preferable to a confession of ignorance, and the impatience of man in pursuing the slow steps of Truth, and surmounting the rugged and impeded path of Knowledge, has made him sit down contented with specious falsehood, and in ignorance glossed over with the assumption of wisdom.

Medicine has shared with the other sciences in their advance towards perfection, but, compared with others, it has not gone forward with an equal step. In the practical details, indeed, the improvements have been great; but in the theories, or systems of explanations, and the rules of causes and effects, with their mutual relations, though we are far removed from the absurdities which but a few years ago formed much of the

scientific lore of our profession, we are still far, very far, from being free from the reproach of theorising, in the contemptuous use of the term. Theories with regard to the nature and cause of disease are still abundantly promulgated, not indeed so wild or so void of the appearance of investigation as those which formerly prevailed, but still sufficiently abounding in the errors of gratuitous assumption and false deduction, to warrant the distinction between theorising and thinking. In the other sciences, it is true, theories idle and absurd as any merely mental hallucinations may be, are still occasionally brought forward, but not among the wise. Such things are reserved for the heads of men like Captain Symmes, whose theories of the hollowness of the Earth and the openings at the Poles, only serve to show to what fantasies ingenuity may be led, unrestrained by judgment, and unaccompanied by thorough investigation and sound knowledge. In our own profession, however, theories flourish with all, and not least with the renowned, the learned and the wise, those who are at this day the lights of the science. The theories of these have indeed much that is valuable, and tending greatly to improve the practice of the art, if judiciously used and kept within proper limits, but, pushed to excess, as they often are by their promulgators, involving many incongruities, and much absurdity and assumption. Thus Abernethy, it is said, partly perhaps in jest, could find but little local disease originating without external violence, but what arises from disturbance of the digestive functions,—and, by way of contrast, Broussais, on the other side

of the channel, finds all disturbance of the digestive functions and general health to be the result of some local inflammation. The one treated everything, from dyspepsia to an ulcer on the leg, with blue pill, powdered rhubarb, and the black draught; and the other drains his patients by dozens or even hundreds of leeches, and starves them upon gum-water or infusion of barley, for every complaint of the system—from flatulence of the stomach to the most violent forms of fever.

The reason that the science of diseases and remedies is thus behind the other branches of science, is to be found in its own nature. It concerns the living frame, the secrets of whose minute operations are not cognisable by our senses, and but obscurely, and by inferential reasoning alone, to be developed by the exercise of the mind. Fair as conclusions may often appear, there is still wanting, in a great measure, that certainty of correctness which attends operations and experiments upon inanimate matter. Life is a thing of which we know not the essence, and probably never can know. We can define it only by its effects, and, in endeavoring to arrive at the causes of these, must almost necessarily be often misled. Powerful as is the machine set up by Lord Bacon for rebuilding the Sciences—the only source indeed from which has resulted the improvement that has already been made—when it is applied to our profession, its grasp is neither subtle nor comprehensive enough to act upon all the elements concerned; and with the nicest use of the facilities it affords, much must remain not unfolded to our understandings, affording opportu-

nity for the speculations of the imaginative, and the conjectures of the curious and the bold.

Still our only hope of arriving, in this matter, at all the knowledge that man can attain, must be founded upon a severe logic and rigid system of scrutiny and induction. To these, all doctrines should be subjected before being received or set forth, and on points where doctrines that can stand this test are not to be found, we must content ourselves with being empirics, till, by long and careful observation, we can rear a fabric that will endure.

Of all the subjects that have employed the thoughts and pens of the theorists, that of fevers has been the most fruitful. Fevers constitute the most numerous and important class of diseases with which we have to contend, and have, therefore, in all ages, been the subjects of special inquiry and interest. Their history, symptoms and variations, have been carefully registered, and constant attempts have been made to explain the way in which various causes acted to produce them, and thus to make us acquainted with the intimate or essential cause of the disease. For the most part, these attempts have been the work of mere conjecture and plausible speculation; in the earlier days of the science, founded upon nothing but an observation of the external phenomena, not corroborated by dissections, or even accompanied by any accurate anatomical knowledge. Even after the latter was obtained to a great degree of precision, as far as regarded the structure of parts, so little versed were practitioners in noticing the various shades of diseased appearances, and connecting them with the various symptoms observed during

life, that their deductions were often eminently fallacious from this cause alone. Still the work of theorising went on, and so multifarious and unsatisfactory were the results of the speculations thus made, that at last the title of a "New Theory of Fevers" was regarded, by sober and philosophical men, as an introduction to some tissue of unsubstantial or absurd reverie. There was always some begging of the question, some hypothetical assumption, on which, as on a pivot, the whole superstructure rested; and however ingeniously this might be framed, and however plausible its deductions might seem, the premises being granted, if they were questioned, for want of proof the whole fabric vanished as quickly as the mists of the morning before the rays of the sun.

After all, we know little of fevers except their effects on the body as denoted by their various symptoms during life, or to be traced occasionally in certain changes found upon examination after death. These are so various in degree, proportion and kind, particularly the latter, that we are unable to tell in what, save in functional disorder, the disease consists, if in reality it does consist in anything else. The relations of cause and effect are here so blended, that our utmost sagacity is not able to penetrate through the confusion, and resolve them into their separate classes. Thus we know not yet the proximate causes of the disease, nor the manner in which the ultimate causes act to bring about the changes in which they consist. Even with regard to the ultimate causes, the opinions of professional men are far from being united,

and some points in the discussion of this subject have long afforded fruitful themes of dissent. The more immediate object of this Dissertation is to examine one or two points in their application to that species of fever called Typhus. This has for a number of years been, in some of its varieties, the prevailing fever of New England, and it is therefore peculiarly interesting to us to ascertain, as exactly as possible, its nature—while, at the same time, the facilities for observation within your reach will enable you to judge more readily of the correctness of the statements and reasoning, and perhaps, by calling your attention more particularly to the subject, may throw additional light upon its investigation. The warning contained in the remarks already made upon the uncertainty attending our researches, should only stimulate us to redoubled care in avoiding the errors of too hasty inferences, and *theorising without thinking*.

The principal point of the proposed examination is its contagiousness. That typhus is contagious, has been a popular doctrine in this country as well as in Europe, and indeed the same belief has extensively prevailed with regard to fevers in general. Many, however, have been found to combat the opinion, and much learning and argument have been employed in the contest. Of late, with regard to typhus, this doctrine has been maintained in a work published by an eminent practitioner formerly of this State, whose talents, acquirements and zeal, contributed greatly to the promotion of medical science amongst us, and who, I am sorry to add, since the first

sketch of this discourse was written, has ceased to be numbered with the living. His name and reputation were high and honorable among the Professors of Healing while alive, and now that he is dead, no one would be more unwilling than myself to detract from his just merits. His reasoning does not, however, appear to me to be conclusive, nor does that of any writer on the subject that it has been my fortune to meet with.

What contagion is, is in itself a subject by no means clearly settled, at least as respects its boundaries; that is, it is not agreed what circumstances, in the spreading of a disease, render it decisive that the disease has been imparted by a person already laboring under it. Were the simple fact, that if, out of a number of persons in apparent health exposed to the company of a person afflicted with any disease, one or two should, in any moderately short subsequent time, be attacked with a similar disease,—were this fact admitted as a proof of the contagiousness of that disease, there are few diseases of any prevalence, whether epidemics, endemics, or occurring sporadically, that would not have to be ranked as contagious. So wide a sweep of classification as this, is repugnant to common sense, though among the ignorant it has been and still is believed, to far too great an extent. It is therefore necessary to put some limits, much short of these, to the doctrine of contagion, but the lines of demarcation are still greatly wanting in distinctness.

Contagion may in a few words be defined to be, in diseases, the

power of self-propagation by the communication of some morbid principle from a diseased individual to a healthy one, whereby the disease under which the former labored, is reproduced in the latter. About some forms of disease there is no doubt; their effects are so uniform, the power exerted so well marked, and their characteristics as contagious so distinct, that no incredulity, short of absolute scepticism of moral evidence, can withstand the testimony in favor of their power of self-propagation. These diseases belong mostly to the class of febrile diseases accompanied with some cutaneous eruption, in which there seems visibly to be some morbid matter generated by the disease, and in the generation of which the characteristics of the disease consist. In these, any slight contact with the diseased person, a few minutes' conversation without any actual contact, being a short time in the same room or even in the same house, are all sufficient, in different cases, to produce a perfectly similar disease in the persons thus exposed. The same effect is produced by handling things that have been in contact with the sick, or, in some cases, that have been exposed to the same local atmosphere; and these effects are produced so frequently, and with so few instances of failure, where the exposed parties are liable to the disease, no instance also being known where the disease spreads without some such communication, that no doubt can exist as to the manner of its spreading.

As contagious, in the sense of the word in which these diseases are so, typhus cannot be consi-

dered; the general experience of practitioners is against it; we have no evidence whatever of the generation of any morbid matter that may be considered characteristic of the disease; and it has not the same facility of communication. Though here and there some cases may occur, lending, at first view, a support to a contrary opinion, yet these are comparatively so rare and solitary, that they must in candor be considered exceptions to the rule and requiring explanation.

There is another degree or kind of contagion, which is that of diseases propagated by inoculation. To this class belong the vaccine disease, the syphilitic, some forms of ophthalmia, and some diseases of the skin; in these, matter generated from a diseased surface in one person, being applied to abrasures, fissures, punctures, or an absorbing surface, in another, will reproduce the disease in the person to whom it is so applied, and not otherwise. Some of the diseases of the kind before mentioned are communicable in this way, with a modification of their violence.

To this class typhus confessedly does not belong; still it is a fact, that when a person is attacked with typhus, others in the family or neighborhood will often be attacked by it soon afterwards, and it will spread not unfrequently through a whole village or town, or even over a large tract of country, though more of the inhabitants escape its attacks than suffer from them. This spreading of the disease, according to the doctrine under examination, is the effect of contagion, and all the cases are to be traced, either directly or indirectly, to commu-

nication with some person previously affected. The question then arises, whether there is any third degree of contagion, to which typhus may be referred for its classification.

By the advocates of the contagiousness of fevers generally, it is said that there is such a third variety of contagion, similar in its nature as respects mode of communication, which is allied by an insensible exhalation or effluvia to the kind first mentioned, but differing from it in there being no visible peculiar matter eliminated from the body characteristic of the disease, and by which alone it may be communicated; and differing also in being less virulent, so that it is requisite that a person free from disease should, under common circumstances, be for some considerable space of time exposed to its action, in order to have its effects shown in the reproduction of the disease. From the same want of virulence, it is supposed that this reproduction happens less uniformly than in the first kind, so that out of many persons exposed to the influence of the contagious disease, only a few will in many instances be sufferers. This third degree of contagion, it is said, may also produce its effects upon persons in health, in a short time, by being in a very concentrated state; as, for instance, when such a person makes a visit of but a few minutes to a place where one or more persons are sick with any disorder supposed to be thus communicable, and where, from the want of ventilation and attention to cleanliness, the air of the apartment is loaded with the fumes emanating from the bodies of the sick, from their evacua-

tions, and from filth collected in various ways. The air of some considerable district of a city, or of the whole city itself, will, it is said, frequently be thus loaded with the sources of disease, so that any person, visiting it only casually, is liable to be attacked by the disease there prevailing.

This third degree of contagion, as above described, seems to be that to which the term *infection* is properly applied by those who contend for the similarity of contagion and infection,—the meaning of the word, by its derivation, being a soaking or imbuing of a body with or in any substance, so that the body thus soaked or imbued shall be filled intimately with and exhibit the characters of it. A disease thus would be said to be infectious, the contagious influence of which, when a person was exposed to it by habitual intercourse with the sick, would, under common circumstances, gradually, and in the lapse of some considerable space of time, penetrate the system of that person so as again to be exhibited in the production of the disease. The same effect might be produced in a shorter time, where the circumstances were more favorable for the action of the infecting matter, either by a greater readiness of the system to receive it, or by its being in a state of greater concentration.

The use of the term *infection* is however very vague and unsettled, especially among European writers. It is used to express the effect of contagion, sometimes the contagious or morbid matter itself, even in the case of diseases communicable only by inoculation, and also as a general synonym of contagion itself.

It has also, I think, been used even by the advocates of the non-contagiousness of diseases supposed to belong to the third class, and applied by them to these same diseases, with reference, however, to the action of a different cause.

Having thus stated the nature of this third degree of contagion, according to the doctrine of those who assert its existence, it will be proper to examine how far their assertion is correct. It must be confessed that, at first view, there is much to give countenance to their opinion, founded upon general observation of the manner of spreading of epidemic diseases referable to this class. If the spreading of these depend solely upon their possessing the power of self-propagation, if we can find no other cause than infection sufficient to account for their prevalence over considerable portions of a town or country, there can be no question on the subject. Such causes, however, do seem to exist, and of so general a nature, that it is difficult to fix with any precision the extent of their influence; and their effects are so mingled and assimilated with those supposed to proceed from infection, that it is not easy to ascertain the powers and extent of the latter, and, in some instances, its very existence is at least rendered a matter of uncertainty, if not disproved.

These causes principally belong to the class of miasmata. The first and most extensive division is that formerly known by the Italian term, *Mal' Aria*, literally meaning bad air, but which is now assumed as a generic term, comprehending all aerial miasms. Of this there are several varieties.

One of them is that mysterious pestilence, that, in the fairest regions of the earth, under sunny and temperate skies, and amid the blandest breathings of the softest winds, broods over the ruined abodes of ancient splendor and power; which has half depopulated the "eternal city" of Rome itself, and threatens, at some future day, to render that, as it has rendered many of its once subject cities and circumjacent plains, the abode of ruin, desolation and death. Another variety is found, where it would least be expected, among the lofty woods of the Island of Ceylon, along the banks of pure streams of swiftly running water, and also amid a broad belt of forest that surrounds or skirts the lofty mountains of central India. Another variety is found on some of the islands and shores of the Mediterranean Sea, and of the East and West Indies—sometimes on dry and level plains, sometimes on the summits of hills, and sometimes on rocky bluffs rising steeply from the water, with a bold and stony shore at the base. The product of these are fevers of various types, generally malignant in character, and formerly, in many instances, supposed to be contagious—but the local origin of which, though it can be traced to no satisfactory cause, is now considered so well established as entirely to have supplanted that opinion. Many other localities of mal' aria productive of fevers might be mentioned, but it is not necessary for the consideration of the present question.

The next species of miasm is that arising under peculiar circumstances of heat, moisture, close confinement, &c., from de-

caying animal and vegetable substances, putrefying sea water, and, as has been supposed, from the mere effluvia of a crowd of human or animal bodies. The products of this species are, fevers of a very malignant and destructive character, dysentery, diarrhœa, and cholera.

The last kind of miasm is that which, by some writers, has been termed Epidemic Meteoration, and is supposed to consist in some exhalation from the earth, or some distemperature of the atmosphere, happening accidentally and occasionally, oftentimes independent of any visible change in the character of the seasons, so far as our observation can appreciate the matter, at other times seemingly connected with such changes, being of limited duration, though that duration may vary widely in its length, and being also distinct in itself and independent of the other varieties of miasm before specified. In extent this meteoration is extremely various,—sometimes limited to a space of small and definite extent, as a few hundred square feet, at others comprehending acres or miles within its limits, but yet with boundaries of considerable distinctness, admitting of almost geographical delineation; at still other times, extensive districts, countries, empires, or even continents, feel its influence. It seems probable that both the sources above mentioned are concerned in this cause, and that where the boundaries are distinct, and the space comparatively limited, the earth is the immediate source of the disorder—and in the widely-extended cases, particularly those not marked by any very definite li-

mits, that the atmosphere is the residence of the pestilential cause, though, even in this case, it may primarily have been derived from the earth. The diseases ascribed to this meteoration are various kinds of epidemics, all in fact not having some other known cause; and it is to this head that those not believing in a third degree of contagion must refer the origin of diseases considered by others as contagious in that degree. There is reason to think that even the most undeniably contagious diseases are often rendered more than usually prevalent by some epidemic constitution or distemperature of the air, and they may possibly, in some instances, under a peculiar concurrence of circumstances, be produced by it. It is certain that they must originate or have originated somewhere, and that they sometimes spring up without our being able to trace the first instance to any definite source of contagion, though this may exist without our being conscious of it. The matter, like the doctrine, of equivocal generation, is one perhaps which our faculties are not sufficiently comprehensive to embrace; and, like that, as it has puzzled past generations, may be left to perplex and confound the wisdom of generations to come.

Another occasional source of epidemic disease is to be found in diet;—thus when, from a bad season, the grain harvest of a country has been injured extensively by mildew or other similar causes, it has in many instances been observed, that afterwards destructive diseases have prevailed among the population. These have been attributed, and apparently with reason, to the use of

the grain thus injured. Similar effects have been produced, when the usual productions of the earth have been unwontedly scanty, and the inhabitants of a country have been compelled to resort to uncommon and often unwholesome substitutes for their customary nourishment. In connexion with this may be mentioned habits of living, as prevailing among certain classes of people—as it seems to be the case that epidemic diseases sometimes prevail more among the members of one class, than among those of others whose general manner of life is different. This is most apparent in the old continents, where the distinctions of society are great, and the different classes are more nearly levelled among themselves, and have their respective peculiarities of habits in clothing, food, &c., than in this country, where there is a greater uniformity through the whole population.

It is often, however, extremely difficult, in a dense population, to make any separation of this from some of the other causes, such as epidemic meteoration or the miasm from filth and putrefaction. It often does not appear to be so much a cause of disease by itself, as to promote the prevalence and diffusion from other causes.

Some allowance must also be made, in estimating the causes of the prevalence of a disease, for constitutional tendencies, which often prevail through a whole family for two or three generations, including even the remote branches, so that they are liable to be affected with the same diseases, particularly where living together and exposed to the influence of the same general causes. To this it is probably

owing, that pulmonary consumption obtained, among the Italians, and, as I think, some other nations on the continent of Europe, the reputation of being contagious,—an opinion that, in this country, where phthisis prevails far more than in Italy, would be deemed too unfounded to deserve serious consideration.

These different causes of prevailing diseases are but slightly sketched out, as it is impossible, within the limits to which these remarks must be confined, to enter into any minute examination of their varieties of situation, form and appearance; nor is it necessary for my purpose. It may be asserted, however, that much of this statement of causes is theoretical, as much so as the doctrine of contagion; yet we shall find that the concurrence of medical testimony, as far as the matter is now known, will warrant, on impartial examination, a belief in their existence and of the agency ascribed to them. There is one cause of fevers and some other disorders, which has not been mentioned, as being altogether unconnected with the subject of contagion, but which, in its nature, is intimately allied with the most important of the causes mentioned, and the existence of which is beyond the reach of dispute. This cause is the common marsh miasm, giving rise, in temperate climates or cold seasons, to the different types of intermittent fever, and their accompanying diseases, and, in more sultry places and seasons, to the more aggravated forms of these and to bilious remittents.

This marsh miasm is now ranked among the varieties of malaria considered as a genus. With

regard to the other varieties, there seems as little reason to doubt; for their similarity in many instances to marsh miasm, their permanent and distinct local habitation, and the uniformity of their effects—as observed not for one season alone, but for a succession of years—render it impossible for a candid mind, after examining the subject, to refuse its assent to their existence and power.

Concerning the next kind, the miasm arising from putrefying substances under circumstances of unusual heat, moisture, &c., there can in many instances be no deception, as the nature of this miasm often renders it perceptible to the senses, and the attack of disease soon or immediately after exposure to it, independent of any other known source, taken in connection with the sensations frequently experienced at the time, make the inference too strong to be reasonably disputed. Miasms of this kind, when in a state of high concentration, are extremely fatal, producing almost instantaneous death in some cases, and in others instantaneous attacks of disease, under which the subject soon sinks, or if he recovers it is slowly and with difficulty.

Sometimes the operation of this miasm seems to be attended with much uncertainty—the disease extending far beyond the bounds at which any sensible effects, other than the production of disease, are to be perceived, and sometimes seeming to pass, without harming, over those most immediately exposed to it, and visiting with its evils those more remote and apparently in a much more secure situation. This circumstance has occasioned a denial

that the disease could have a local origin, or at least that it could originate from the filthy accumulation to which, in particular instances, it had been imputed. The same circumstance, however, is ascertained to happen in the case of marsh miasm, and also some of the varieties of mal'aria, supposing the opinion of observers with regard to the particular localities of their origin to be correct. Instances of this sort are brought forward by the believers in contagion, in proof of their doctrine, as in these cases they ascribe the spreading of the disease, supposed by others to arise from this miasm, to contagious properties in the disease, and not to remote or irregularly acting miasm; but as similar irregularities occur in marsh miasm and mal'aria, the diseases arising from which are recognised not to be contagious, this argument can prove little or nothing.

The effects of bad diet in producing diseases are still more uncertain in their operation as a general cause. Sometimes they appear so intimately connected in circumstance with the cause, as to appear obvious to even the least observant; sometimes they appear to act only the part of predisposing to disease; and it is frequently doubtful whether the disease and the badness of the diet may not both be owing to the same general cause. This is in those cases in which, from some irregularity in the seasons, or some peculiar state of the atmosphere, the productions of the earth are not of their common goodness or in their common quantity. In these cases, there seems to be a connection between this cause and epidemic meteoration,—of all the

general causes enumerated the most fruitful in doubt and dissension.

Meteoration appears to be literally "the pestilence that walketh in darkness and smiteth at noonday." That some such cause exists, has been recognised by the profession from its earliest establishment; but of its origin and nature, little if any more is known, than in the time of Hippocrates. No evidence can perhaps be produced, which will reduce our convictions of its existence to an undeniable certainty, yet so much, that to deny it would be unreasonable scepticism. The very causes already enumerated are among the proofs, by the analogy they afford. The chief point in which it differs from the other miasms is in its want of regularity, and not having like them a definite known location. With the exception of the putrefactive miasm, they are all alike out of the reach of our organs of sense, and even of the most refined tests afforded by chemistry. We know them but by their effects. In these the different species of well-ascertained miasm are tolerably regular, while the epidemic distemperature of the air produces, at different times, different diseases, possessing, as is thereby rendered probable, different varieties of nature. Sometimes it seems to accompany seasons verging to any of the extremes of moist or dry, hot or cold, and sometimes defies for years the alterations of all. In some instances its influence is limited to one season, in others it does not seem to feel their change. Its victims are around us, but we know not whence comes the blow that strikes them down, nor how

it may be avoided. When it prevails, it sometimes seems to act in producing disease through its general influence, and sometimes through the intervention of some exciting cause.

These exciting causes seem to be any of those which, resulting in debility of the human frame, render it less able to withstand the pestiferous influence. Over-exertion of body or mind ; undue exposure to wet, cold or heat ; irregularity of hours for food and sleep, or deficiency of these ; badness of diet ; harassing, anxious or violent passions,—all these, when a general cause of disease is exerting its power over the system, are often sufficient to determine the attack, which possibly, but for them, might have been escaped. They do not act alike on all individuals ; but in proportion as they do act in invalidating the natural power of resisting disease, so are they followed by the epidemic.

Atmospheric causes, as has been remarked, seem also to be complicated with the undoubtedly contagious diseases. Thus small-pox, measles, scarlatina, &c., spread in some seasons with much greater rapidity than in others ; their ravages are more extensive, and their attacks more fatal. The symptoms of the accompanying fever are also much diversified, seeming to take their character from what was called by Sydenham the Epidemic Constitution of the year.

The effects resulting from the influence of these general causes are exactly such as to lead to the popular belief in the contagiousness of the diseases thence arising, and it seems likely that the notion of a third degree of contagion

might hence originate. A slight sketch of the manner of spreading of an epidemic arising from meteoration will be pertinent to the present inquiry, as such must probably be the source of typhus, if it be not contagious.

In the first instance, when the distemperature of the air or the exhalation from the earth has reached a sufficient degree of intensity to manifest its effects upon the human body, one or two are at first attacked, from some peculiarity of constitution rendering them particularly obnoxious to its influence, or from some more than common exposure to it ; often in consequence of some prior disease, through the debility thereby induced, or from the action of some of the other exciting or occasional causes. Others in the same family or neighborhood soon follow, from similarity of constitution, habits of life, and residence in the same spot where, as beginning, the cause may be supposed to have the greatest intensity of action. To these may be added the unusual labor, anxiety and watching, occasioned in a family by illness and the necessity of attending closely to the sick, and respiring the air of their chambers, tainted, as it must be under all common circumstances, with the secretions and excretions from their bodies of an unnatural and impure character. If the meteoration be extremely limited, it may not extend beyond the bounds of a single residence, though within that almost every one may suffer. If rather more extended, two or three adjacent families may partake of the calamity, especially those in the habit of rendering attention to the sick ; sometimes the cases in the differ-

ent families may begin at nearly the same point of time. If the meteoration acts upon a still larger space, cases will soon occur throughout the neighborhood, and with the aid of the occasional causes above recited, the disease will become prevalent through the whole tract, however large, over which the miasm hovers, or from which it emanates.

It is extremely natural that persons unacquainted with the existence of general causes, and more apt to refer to something sensible for a cause, than to what is insensible and difficult to be comprehended, should trace all these cases to the first that occurred, considering that as a parent stock, and learn to look upon the disease as "catching." From the influence of youthful prejudices or early imbibed doctrines, it is equally natural that those more acquainted with diseases should, in the infancy of the science, have embraced the same opinion, and finding it to agree so well with what passed before their eyes, should have concluded that its difference in other respects was merely some anomaly, and therefore refuse to admit that the opinion they had been taught to believe could be wrong—and that thus the opinion should have been handed down from one generation to another.

Where the want of cleanliness and ventilation is extreme, a variety of putrefactive miasm may be combined with that of meteoration, rendered by the same cause more than commonly concentrated, and thus produce a very immediate attack of the disease after only slight exposure to it—or, more properly, to its causes; or even at some distance

of time after, in consequence of the known circumstance of miasm becoming, as it were, latent in the human body, and yet ultimately producing its peculiar effects, as we occasionally see in intermittent fevers in this part of the country, derived from marsh miasm several hundred miles distant, and after an interval of several months.

In short, as regards the apparent manner in which diseases spread, the effects of epidemic meteoration within the limits of its action, when these are of any considerable extent, are so like those that would be produced by infection, that the dispute seems, at first view, more about words and names than anything else. Its only importance is to those out of the reach of the general cause, if it be one of limited locality, as is often the case; and this is sufficient to render it highly desirable, for the cause of humanity, to have the point definitely settled: for where there is such a thing as contagion in a disease of any severity, it must render it expedient to confine all who may possibly have been infected by it, as well as those actually sick, within as narrow limits as possible, lest they should carry the death and desolation of their own homes among their as yet uncontaminated neighbors. In like manner, it is proper to prevent these neighbors from having any intercourse with the sick, save what will barely suffice to render the assistance which humanity demands; with all the other precautions that have been taken in such cases. Such a state of things might almost justify, as regards mere political expediency, the cruel procedure said to be

practised in Abyssinia, when the smallpox attacks a family. In this case, the neighboring population assemble round the house in arms, and set it on fire, consuming the dwelling and its inmates together. Should any of them attempt to escape, they are shot down like wild beasts the moment they leave the flames.

To determine, however, whether a disease be infectious or proceeding from the operation of some general cause, must in many cases be a point of extreme difficulty, from the external similarity in the manner of their spreading, as has been stated. In some cases, the disease attacks so many nearly simultaneously, without, in some, any known exposure to the presence of the disease, that it thus decides the question. In other cases this does not happen, and the ground is matter of dispute. This dispute has long existed, though the number of disbelievers in contagion, other than of the first kind, has of late years greatly increased—as men have been more diligent in investigating the phenomena of diseases, and the circumstances attending their rise. With regard to many of the old instances cited in proof of the contagiousness of certain fevers and other diseases, the time is past in which an investigation might have been made, and perhaps have shown the inferences drawn from them to have been unfounded. It is therefore lost labor to be employed in discussing these; it is only with regard to instances of recent date, and those yet occurring, and to occur, that our researches will avail.

Notwithstanding the complexity and perplexity of the subject, there are some leading points that

may be taken as grounds of opinion, and as forming distinctive marks between contagious diseases and those proceeding from the action of a general cause; although in many or most other respects of comparison, they should appear extremely similar.

The first is, where several persons are attacked nearly simultaneously, without particular communication with each other or any person already sick; or where they are successively attacked without such communication. In these cases, it seems most proper to infer that the disease must proceed from the action of some general and common cause; such as some peculiar miasm, either in the air or emanating from the earth, or some putrescifying source, &c. This inference is strengthened, if any source of such miasm be known to exist; also, if many of those in most immediate attendance upon the sick escape, while others less employed about them are attacked,—though the contrary does not equally favor the other side of the argument, as these very persons are most likely to experience the effects of a general cause, from their exposure to fatigue, anxiety, &c.

Secondly, where the disease is of limited locality. However rapidly it may spread within its limits, if patients removed to some considerable distance do not communicate the disease, it cannot be considered as contagious, but may be presumed to arise from some general cause. It ought, however, to be merely the diseased person that should fail to communicate the disease. The cases where it is supposed to be communicated by foul linen, bedding, &c., ought hardly to be con-

sidered proofs of its contagiousness; for these things are capable of enveloping in their folds and interstices considerable quantities of miasm, and of conveying it from place to place. They are likewise imbued with the depraved secretions of the diseased persons who have used them, and being in this state packed down close, may well be supposed, in consequence of the fermentative action known to take place under such circumstances, to add doubly deleterious properties to the air which they contain, and render the poison of the miasm so concentrated as to be ample cause of disease in the persons exposed to them before purification. The force of this argument will be much greater in cases where the original miasm is of a putrefactive nature, which may possibly, or even probably, be the case with all the varieties.

Thirdly, if a disease be contagious, its seizing upon persons being fortuitous, it will not interfere with the diseases generally prevalent at such times, except in its own particular subjects. That is, among those not exposed to the contagion there will be about the usual number of diseases, according to the population, that there would be if no such contagious disease prevailed; and these diseases will run through their usual course of symptoms, and to their usual termination, as if the contagious disease had no existence.

When, however, a prevailing disease proceeds from the action of a general cause, its effects will be shown upon other diseases. They will either be for the most part superseded by the prevailing disease, or they will have their peculiar character and symptoms

modified by its action, so as to partake of its nature in a greater or less degree,—as stained glass imparts a tinge of its hue to all objects seen through it, whatever their original colors may be. When, therefore, any epidemic has this character of superseding other diseases, or of mingling with them so as to give them its own peculiar constitution, it may reasonably be inferred that it is not in itself contagious, and that the apparent communication of it is a deception, and in reality owing to the general operation of its cause and the action of occasional or exciting causes.

Against this statement and inference it may however be argued, with considerable plausibility, that the infectious effluvia arising from the persons of the sick may be so diffused through the air, remaining suspended in it, as to exert some general action upon all, and sufficient upon those whose vital powers were laboring under disease, to produce its proper effects, either wholly or partially, upon them. Where the sickness is great, the air confined, and the place densely populated, it does indeed appear as if this might be the case; but it is not likely when the numbers of the sick are few and scattered, the air free, the situation open, and the houses, as they generally are in our country villages, ranged along the sides of only one or two streets, with yards and gardens between, and fields in the rear,—and it is still less probable in the scattered farm houses that make the bulk of a country town. A yet stronger argument, and one applicable to all situations, may be brought against the supposition from the undoubtedly contagious diseases. These have likewise

their insensible effluvia, by which, under common circumstances, they are propagated with almost infinitely greater facility than those considered infectious, and consequently would much more strongly infect the air; yet they do not thus mingle with other diseases, giving them a coloring of their own, throughout their whole variety. A person that has the smallpox or the measles, has these diseases definitely;—we do not hear of varioloid pneumonia, or enteritis with symptoms of measles, or inflammation of the liver with the character of scarlatina. These affections, nevertheless, may possess their simple inflammatory character, or have symptomatic fever of a typhoid or bilious nature,—showing thereby how much superior in effect, as general causes, must be those of typhous or bilious fever, to the effluvia of contagious diseases; whereas, if they arose from infectious matter in the air, they ought to be inferior. Hence it seems to be a fair conclusion, that the principle above stated is correct.

Fourthly, when a disease arises from some of these general causes, it will frequently be the case that it will not show itself fully at once, but will first exhibit its effects in modifying other diseases—giving them a character different from what they before had, and belonging to its own nature. Afterwards the fully-formed and distinct disease will appear. This remark applies to those cases in which a considerable time may be supposed necessary for the full development of the activity of the cause, as in the case of periodical miasms returning with certain seasons of the

year,—as, for instance, that causing the bilious remittents of our southern seacoast; or in some occasional and accidental miasms, depending on a concurrence of peculiar circumstances to produce them, as a long continuance of calm, dry, hot or rainy weather, acting upon the surface of the earth; also in varieties of epidemic meteoration of great extent, where the atmosphere appears to be the source of the disease—since some time would seem requisite to change sufficiently the character of an agent of such extent, and fully to impregnate it with morbid properties. It does not seem requisite that this rule should be always applicable; for the more powerful action of causes may sometimes produce, in a short time, the effects commonly produced in one much longer: but where it does apply, the inference is decidedly against the doctrine of contagion.

Fifthly, where isolated or sporadic cases of a disease occur, without any known prevention to their spreading, if they were contagious. Such cases must be presumed to arise from some peculiar personal exposure or habits, and are altogether at variance with the doctrine of contagion in such instances, though not so with that of a general cause.

If these rules be applied to those diseases which are contended for as being contagious in the third degree, or infectious—according to the nomenclature that I have used—they would, as far as my recollection of the history of such diseases serves, go far to prove that there is no such thing as contagion of that kind, or that at least many of the seeming in-

stances of it must be erroneously conceived of ; and that, by a proper investigation and examination of them, with a candid mind and a careful inquiry into the general causes of disease, the true nature of these instances would appear. The only way of avoiding this result seems to be, in supposing that a disease may be propagated by contagion and by a general cause at the same time,—a doctrine little consistent with philosophy, and, if admitted, likely, through its immediate or remote consequences, to put an end to all certainty in medical science.

It will not answer to deny the existence of such a cause as epidemic meteoration, as this would be too contrary to the testimony and opinions of the most careful observers of which Medicine can boast, and too much in opposition to the knowledge we have of late years obtained of the various kinds of miasms—with which, in its nature, this seems to possess a strong affinity. Indeed, the more attention we pay to the observation of ærial and terrestrial causes, the more reason we find to extend our belief as to their existence and number ; and a late able writer has done much to show that not only epidemics, but many other instances of disease, may probably be found to owe their origin to these sources.

Admitting these conclusions, there can be no difficulty in deciding that typhus is not contagious ; for it will, it is believed, be found that it is comprehended under every one of these points of distinction : for,—

1st. Where typhus begins to be prevalent, it will often happen that several persons will be attacked nearly simultaneously,

without any, or any particular, communication with each other, or with any diseased person ; while others, in equal or greater numbers, that have such communication, escape.

2d. It is often confined within very narrow limits, and does not spread out of them. Thus sometimes, in a large family, only one or two persons will be affected ; at others, nearly or quite every one will be taken down, either successively or nearly at once, while the next neighbors, in constant communication, will have only one or two cases, and sometimes none at all. Also it will happen, that if a person sick with it be removed to a distance, or if a person that has been where it is prevalent, be, as is sometimes the case, attacked with it after having removed to a distance, they will go through with it without communicating it to others, even in fatal cases.

3d. It is matter of notoriety among physicians, that when typhus is prevalent, it supersedes other fevers or combines with them, so as to materially alter their character from the onset, and finally to bring them into its own form. This will be the case even with the symptomatic fevers of the most purely inflammatory affections, as, for instance, laryngitis. I have witnessed instances of this complaint occurring in a typhous distemperature of the air, in which, when, after a few days, the local symptoms were almost wholly removed, the attending febrile symptoms, always of a less intense character than usual, assumed distinctly the form of typhus, and lasted two or three weeks, going through all the changes of a regular attack of a

mild form of the disease. I have also seen it, in like manner, succeed to a painful attack of the nerves of the face arising from cold and a disordered state of the digestive organs ; but it is useless to multiply facts so well known.

4th. When typhus itself is not actually prevailing, but as a kind of precursor to its prevalence, febrile diseases of a tonic character will lose the mode of action peculiar to that character, and assume a typhoid form, requiring a corresponding change of practice for their successful treatment. Subsequently, simple typhus will frequently make its appearance. Instances of this have often been related, and it has occurred within my own observation, as will presently be shown by a short narrative.

5th. Isolated and sporadic cases of typhus frequently occur without any known source of contagion, and without any subsequent extension or prevalence of the disease. Such I have several times witnessed, and have heard mentioned by other physicians as occurring to themselves.

These views of typhus have been much confirmed by witnessing the rise and progress of the disease in my own vicinity, from a state in which there were no appearances of it, to one in which it was the prevalent disease, and gave a tinge to almost all other complaints.

During nearly the first three years of my residence in Charles-town, I did not see a single case of typhus. Idiopathic fevers of any kind were few in number, and were generally of a simple form, sometimes complicated with bilious symptoms. The symptomatic fevers were decid-

edly those attending simple inflammation, requiring depletion, and greatly and promptly benefited by it. Towards the close of the third year, the first case of typhus occurred. It was in a robust old man, and was very severe, approaching more nearly to typhus gravior than to the milder form. This man had not probably been half a mile from his own farm for several months, and no cases of fever in any way resembling this had occurred in the neighborhood. He recovered, and no other person in the family or neighborhood had any similar attack till nearly two years after, when one or two cases of typhus mitior occurred in the house of one of the nearest neighbors, and the next year after these, two or three more in two other houses. The neighborhood consisted of only about half a dozen houses within a mile, and these were scattered in various directions. In the immediate vicinity of the houses in which the cases of fever occurred, were several small marshy spots or bog-holes, overgrown with alder bushes and strown with decaying timber. The place was at the distance of several miles from the village, where no typhous affection occurred, until four or five months before the second set of the above cases—when, in the early part of the spring of 1826, there were two or three cases of typhoid pneumonia complicated with bilious symptoms. In the next spring there were two or three more ; and soon after, when the weather had become more warm and settled, typhus began to show itself distinctly. The first case that occurred, followed immediately upon the measles. The

symptomatic fever did not subside with the eruption ; but while the latter disappeared in the usual time, the fever assumed the form of typhus, and ran through its accustomed period. The next case did not occur till some time after, in the person of a criminal in the gaol, who had been for some time under close confinement. A few days afterwards, a girl in the next house was taken sick, and then one on the opposite side of the street, which is very broad. Afterwards three cases happened almost simultaneously in another house a few rods below the gaol, in the persons of two men and a lad of sixteen, who were overtaken by a shower in the fields, while much heated with exertions to get some work completed before the rain should begin. According to their accounts, they all caught cold, felt unwell for a few days more or less, and were then all taken down with the fever. None of them had had any communication with the persons previously affected. The boy was removed to his father's, at the distance of a mile and a half from the village. His case was protracted and severe, but no other person in the family had the disease. One of the men went to his own house in a different part of the village, and at some distance in the outskirts of it. He was poor, and lived with his whole family of five or six persons in a common room ; yet no one there had the fever but he. The third man remained in his own house, where they were all attacked : after being for some days apparently convalescent from the fever, he died suddenly of what externally appeared to be an attack of the bi-

lious colic. No one in this third family had the disease subsequent to these attacks. Several weeks after the prisoner in the gaol had recovered, two of the gaoler's family were attacked about the same time ; they were, however, young persons, who had little or nothing to do with attendance on the prisoner, while those who had been thus employed escaped. There were a few other cases scattered round in the village and in its vicinity, without any more apparent connexion with each other—frequently but one and never more than two in a family. The whole did not end till winter began to set in with some severity, when typhus as a distinct fever ceased to appear ; and the few febrile cases that occurred during the winter, were those of typhoid pneumonia, or, more strictly speaking, bronchitis, either subacute or chronic, with typhoid fever,—also inflammations of the throat, with fever of the same kind, and a disposition to aphthæ.

With the return of warmer weather the disease assumed its more simple form, and soon became more prevalent than in the preceding year, though principally confined within much narrower limits,—almost all the cases in the village occurring within a space one third of a mile square, and only a few cases happening out of the village, and those irregularly and distantly scattered. The tract where the disease thus prevailed, is in the lower part of the village, where the soil is naturally rich and tenacious of water, and where, in consequence of the heavy rains of these two summers, the water was almost constantly standing in shallow

pools out of the carriage path, overgrown with an unusually rank crop of common road-side herbage. Indeed, in by far the greater part of the cases that occurred, whether in the village or without, there might be found, in the vicinity of the habitations, some spot where water was stagnating and abundant decomposition of vegetable matter going on. Persons from without what seemed to be the limits of the fever, were constantly visiting and watching with the sick, and in no instance did these subsequently become themselves the subjects of the disease. One or two also, who, after being attacked, were removed to a distance, did not communicate the disease, although one of these very cases was by far the most severe that occurred, and terminated fatally. With the setting in of steady cold weather, typhus disappeared; but again, in the early part of the spring, showed its influence as before on the pulmonary complaints of the season, and already, since the weather became warmer, has appeared uncombined in one or two cases occurring in my own family—in persons whose situation and habits gave me a moral certainty that they had been exposed to no contagious source.

Another point in the theory of the disease, advanced by the same distinguished physician, is, that it is a specific disease, or a disease "*sui generis*." If by this be meant that it is a distinct variety of fever throughout its course, I should probably agree to the position; but if, as from the context seems more probable, it be meant that typhus is a disease by itself, like smallpox or measles,

the doctrine seems very questionable. Much of the proof in support of it rests upon the assumption of its contagiousness; and so far as that has been invalidated by the foregoing arguments, so far is this also. It is however also urged, in favor of the supposition, that it seldom or never attacks a person twice. The proof of this is his own personal experience, and a somewhat unwarranted scepticism of the observation of others. Physicians of no great pretensions to nosological accuracy, may no doubt sometimes confound other affections with typhus; but those of any considerable acquisitions in science, and of careful discrimination, would not be likely to do it,—and there is the testimony of such in favor of its having more than once affected the same subject. Even admitting it to be a rare occurrence, it will not do therefore to argue that typhus is a specific disease and generated by contagion, for there is no reason that I know, why the susceptibility of the human body to the impression of a general cause should not be exhausted by the attack of the disease produced by that cause, as well as in the case of its being produced by a specific contagion. Indeed we have an instance in favor of it in what is called the stranger's fever in the southern States of the Union, by which the undue sensibility to the influence of the climate is wholly or in a great measure destroyed. To deny however the possibility of a second attack as the case stands, and that not unfrequently, would only prove that there are two diseases so much alike, that skilful observers cannot readily distinguish them, if they can at all,—a thing

not easily to be credited, and of no use if it could be proved, except to render impotent support to a theory already deficient enough not to be materially benefited by it.

Farther investigations with an eye to truth and not to theory, will, it is hoped, render these points more settled, not only in typhus but in other idiopathic fevers.

Such are the conclusions to which a careful investigation of the subject has led me, and such the reasoning by which those conclusions were formed; still in candor it must be confessed, that however satisfactory the general principles, as such, may seem to me, there are cases related, that, if taken literally as reported, would seem to admit of a more easy explanation by the contrary doctrine, and require a remarkable coincidence of circumstances to account for them as arising from a general cause; though there is nothing impossible, or perhaps improbable, in the occurrence of such a coincidence. It has been remarked, that numerous as are false theories in medicine, false facts are unfortunately equally numerous.

“What follows springs from what has gone before,”

has unhappily been far too much the motto of our profession; and besides, in relating the occurrence of things, many previous or accompanying circumstances are often overlooked or omitted, which might give a very different complexion and bearing to what is actually told. In our reasonings, also, we are far too apt to examine facts with a view to establish notions previously, though perhaps sometimes imperfectly formed, instead of simply to arrive at the

truth, without regarding on which side it may appear; and this will give, even insensibly to ourselves, a corresponding coloring to our statements. Such apparently anomalous cases must therefore be noted as subjects of investigation, and thus have their correctness tested; for what has several times happened in such cases will be likely to happen again, and by carefully noting the attending circumstances, either the apparent difficulty will be explained, or more correct principles established.

II.

MR. LAWRENCE ON INCONTINENCE OF URINE.

INCONTINENCE of urine arises in consequence of inflammation of the bladder—that is, in the inflamed state the bladder perhaps can hardly bear the presence of even the smallest quantity of water, so that there is an incessant desire to expel the urine immediately on its being secreted, and this is called incontinence of urine. This affection, however, sometimes takes place under circumstances where the immediate cause of it is not quite so obvious. It is by no means uncommon in young subjects—in children—occurring in them particularly in the night. They hold their water very well during the day-time, but when they go to bed the contents of the bladder escape insensibly during their sleep, and thus they wet the bed. This often goes on to a very considerable length, and children are punished for it. An idea is entertained that they will not evacuate the contents of the bladder in the proper way, from negligence or carelessness: how-

ever, there are many instances in which we cannot refer it to that cause; and in the majority of cases, if not in all, it is to be referred to disease, and does not depend on the will of the patient. It should seem that, in these instances, there may be a condition of the bladder something like that of chronic or slight inflammation, so that it is excited by the presence of urine in a greater degree than usual; insomuch that the contraction of the bladder, which in the natural state is a kind of half-involuntary act, takes place more readily than under ordinary circumstances; the bladder contracts, and the urine is evacuated without awakening the patient.

In these cases our first object is to take care that the stomach and bowels shall be kept in a proper state, by regulating the diet and the patient's general mode of living; and by doing this, we, in a great majority of instances, put a stop to the affection, but not in all. If we find further measures necessary, we employ in succession the warm bath, the tepid bath, and the cold bath; and if these fail, we may then have recourse to what seldom will fail, the application of a blister to the lower and anterior part of the abdomen in the neighborhood of the bladder.

Incontinence of urine may sometimes, perhaps, arise from mechanical causes; a calculus, for instance, in the bladder, may be so lodged in relation to the orifice of the urethra, as to close up a portion of it, and leave the rest open for the continued escape of the urine.

Retention of urine frequently takes place in consequence of particular states of the bladder.

It will be produced, in the first instance, from a complete interruption or diminution of the nervous influence, as in the case of serious injury to the spinal cord, from fracture of the spinal column, or concussion of the cord. The contractile power of the muscular coat is lost; under such circumstances the patient has not the power of emptying the bladder, and we are obliged to relieve him with the catheter. Probably a somewhat analogous case—that is, either an interrupted or diminished influence of that part of the centre of the nervous system with which the nerves of the bladder are connected, produces the retention of urine which takes place in the last stage of typhus. The bladder then becomes distended, and we should relieve it in the usual way; not that it is very necessary as to the result of the case, but it would not be very creditable to us as practitioners to allow that retention of urine to continue. Retention of urine frequently occurs, particularly in old persons, from an over distended state of bladder, brought on by neglecting to expel the urine when it is accumulated, so that the muscular coat of the bladder loses its power. In elderly persons the sensibility of the bladder seems to be diminished, so that they do not feel the necessity of voiding the urine so much as young persons do. Then, again, a person not being conveniently situated for emptying his bladder, neglects the first call, allows it to become distended, the desire perhaps goes off, a large quantity of water accumulates, and the bladder rises up to the umbilicus, or even higher; and when the patient is in a con-

venient place, and attempts to empty it, he finds that he is totally unable to do so, and that he cannot void any water at all. We introduce a full-sized catheter, and let off a large quantity—some pints, perhaps; the bladder becomes distended again, and the patient is not able to evacuate its contents by the natural efforts, therefore we must go on introducing the catheter at short intervals, to prevent the distension, and this gives an opportunity to the bladder to recover its natural contractile powers; and sometimes several weeks may pass in this way. In such instances we may sometimes, if we do not pay attention to all the circumstances, be misled by this fact, that when the distention has gone on to a certain extent, the resistance which the neck of the bladder naturally affords to the escape of the urine is overcome, it gives way, and the water flows out of itself; thus incontinence of urine is joined to retention. You have, therefore, got apparently two opposite states in the same individual; the bladder is excessively full, the patient cannot evacuate its contents, and yet the water involuntarily flows off in small quantities through the urethra. In the natural state, the contraction of the sphincter of the bladder counterbalances the force which can be exerted by its muscular coat; so that, when we are going to evacuate the water, we are obliged to call in the assistance of the abdominal muscles; and when the muscular contraction of the bladder becomes greater than the resistance which the sphincter offers to it, then the urine passes through the orifice of the urethra; and after the patient is relieved, it produces a renewal of this involun-

tary flow. In the case, therefore, of an old person who may complain of not being able to hold his water, and when you find the water flowing off involuntarily, do not give any opinion about it till after you have, at all events, laid your hand upon the abdomen, and felt whether the bladder is distended or not; for very serious consequences may be produced by a mistake of this kind. It happened to me, a good while ago, to be sent for to see a gentleman laboring under an affection of the bladder; and the medical attendant who had lately seen him, mentioned that the case was one of great irritability of the bladder—that it would hold no water at all—the urine passing off as fast as it came into it. He said he had been doing all he could to get the natural power of retention of the bladder restored; he directed the patient to drink diluent fluids—in short, he had done all he could to prevent it, but still the water ran off. It appeared to be a singular case. I put my hand under the clothes upon the abdomen, and I felt the fundus of the bladder forced up a good way above the umbilicus. I said I had brought a catheter with me, and that I might just as well introduce it, to see if there was anything in the bladder. I introduced it, and about five pints of urine immediately flowed off. The fact was, that the bladder had been allowed to be distended in this way about five days before I saw him, and the consequence was, that that gentleman never recovered the natural power of emptying the bladder afterwards, but he, after a certain time, acquired the art of introducing the catheter, which he still employs; he can introduce it, and let off the water whenever he

finds a desire to do so, but he never has been able to empty the bladder by the natural powers since that time. It is of great importance, therefore, to introduce the catheter in cases where the bladder has been over-distended, and to continue to do so, so as to enable the muscular coat of the bladder to recover its natural contractile power, in order to prevent patients from being reduced to the very serious and unpleasant state of not being able to relieve themselves by their own natural efforts.

III.

PNEUMONIA—EXPECTORATION OF PUS—CONVULSIVE EPIDEMIC.

THE Medico-Chirurgical for the last month contains some account of the proceedings of the Medical Institutions of France. We regret that we have only room this week for a very few notices of those proceedings.

Treatment of Peripneumony by large Doses of Emetic Tartar.

At a late meeting of the Medical Society of Paris, the subject of antimony in pulmonic inflammation was broached, and M. Thealier asserted that he had multiplied his observations to a great extent, and could positively affirm that antimony, in large doses, constituted a most important and efficacious remedy for the phlogosis in question. He avers, indeed, that in many cases, where all other means had failed in arresting the progress of the inflammation, and where the lungs or pleura were threatened with fatal disorganization, the tartrate, in large doses, put a stop to the ravages of the disease. There can be no doubt

that antimony is a powerful auxiliary to the lancet in pulmonary, as well as many other inflammations.

Mysterious Expectoration of Pus— Hepatic Abscess, &c.

A case related to the society by M. Merat occasioned a very warm discussion among the members, and, as usual, drew forth many curious facts and observations. The original case was as follows:—A young lady expectorated twice a day, for a long time, a large quantity of purulent matter, of a very fetid odor. The expectoration occurred early in the morning, and again at two o'clock, p. m. The paroxysm, which generally lasted only a few minutes, was preceded by a sense of suffocation—then came on a slight cough, and a discharge of a tumblersful of pus in a few minutes. The chest was examined with the stethoscope, and it was thought that an excavation existed in the posterior and lower portion of the left lung, but they do not appear to have been very positive as to that point. This young lady had been subject to attacks of this kind for some years, and married, contrary to the advice of M. Merat, at an early age, and became pregnant. She got to the eighth month of utero-gestation, having frequently required venesection. The expectoration of purulent matter ceased, and this lady died in two or three days' illness. On examination, (which was unavoidably confined to the thorax) no trace of disease could be found in either the lungs or their coverings. There were no adhesions—no trace, in short, of any malady whatever.

M. Gendrin remarked that, as hepatic abscesses sometimes make their way through the diaphragm, and the matter is evacuated by the trachea, this might be a case of the kind. It is astonishing that, in such a society, no one observed that such a thing was impossible in the present case, where there were no adhesions, nor any breach of structure in the diaphragm, through which the hepatic pus might pass. M. G. related the case of a lady who had suffered for several years from attacks of purulent expectoration, preceded always by engorgement and tumefaction of the right hypochondrium. The matter was ejected by a combination of vomiting and coughing, after which the region of the liver diminished for two or three weeks, when the symptoms were renewed. This female is still living, and has been seen by Recamier, Dubois, and many other eminent physicians of Paris.

M. Sandras conceived it probable that, in M. Merat's case, the puriform matter came from the stomach—the cough and sense of oppression preceding and accompanying the discharge being no positive proof that the matter came from the lungs. M. Merat himself acknowledged that he now came to a similar conclusion, in which, indeed, we entirely agree. M. Merat declared, however, that the pus, on repeated examinations, was pure, and without the least admixture, apparently, of mucus. Various opinions, supported by cases, were brought forward respecting hepatic abscesses, but these we need not detail.

Convulsive Epidemic.

At a sitting of the Academy M. Traunoy read a memoir on a convulsive malady, which has reigned for some time epidemically in the commune of Bray-sur-Somme. At the instance of the Prefect, M. Traunoy was summoned to the scene of action, and there found four females affected with the malady. The first was a girl of 17, and her attacks resembled hysteria; they terminated in a deep sleep, and the patient retained no recollection of what had happened. The second uttered cries resembling the crowing of a cock. The third had a kind of hiccup, imitating the noise of a fox. The fourth cut all kinds of capers, leaping like a carp, climbing along a wall with her head downwards, and so forth. M. Traunoy affirms that it is not unusual for the women in the environs of Amiens to utter cries like those of different animals, and even to interrupt divine service in such a manner that they require to be turned out of the church. M. Traunoy alluded to the epidemic *mewing* observed in a convent by Hecquet, which ceased on the physician's declaring that it would be absolutely necessary to bring in a company of soldiers, to flog the fair sisterhood round. The thanks of the Academy were voted to M. Traunoy for his curious paper.

For our parts we have no doubt that the "epidemic" was nothing less than that mixture of humbug and hysteria, in which the fair sex occasionally delight to indulge. As for the barkers, and pantomists, and mewers, we protest that M. Hecquet's drum-major and cat-o'-

nine tails would prove an infallible specific. If the worthy mayor and M. Traunoy, instead of writing proclamations and memoirs, were to call in the assistance of the arm militant, or souse their patients with some buckets-ful of cold water, we have no doubt that the candidates for the "con-

vulsive epidemic" would speedily vanish. These are the means which succeed à merveille in hospital practice, and although young ladies must be treated more tenderly, yet the principle will hold in all, however prudential considerations may modify the practice.

BOSTON, TUESDAY, NOVEMBER 9, 1830.

SURGEON-DENTISTS' MANUAL.

WE have before us a small duodecimo, recently published by Carey & Hart, of Philadelphia, which contains a great quantity of information on the anatomical structure and the physiology of the teeth. The author, Mr. WAITE, has been impressed with the necessity of a thorough knowledge of anatomy, in order duly to comprehend the nature of dental maladies, and one of the chief objects of this little volume is, to afford the means of supplying this want, without resorting to the voluminous works in which systems of anatomy are usually taught. The bloodvessels, absorbents, nerves and muscles, more nearly connected with this useful set of instruments, are accurately described; the growth and changes they undergo at different periods of life, and their relation to the same instruments in other animals of the class mammalia, have also received a very proper share of the author's attention. The work cannot fail, we think, to answer well the purpose for which it was designed, of a manual for the practical dentist,—and in the notes will be

found some useful hints respecting the diseases of these structures.

NEW THEORY OF HUMAN DEFORMITY.

THE object of the inquirer into physical science is generally regarded as twofold; first, the careful observation of facts—and secondly, the comparison of these facts so as to deduce from them the laws of the science in question. It is evident, that of these two processes the first ought to precede the second; and the more fully and completely the former has been performed, the greater facility will be afforded for the accomplishment of the latter. The more extensive then the observation of facts, and the greater number of individual instances observed, the more likely are the laws deduced to hold true in future cases. At best, however, physical laws must fall short of absolute certainty; since it is impossible that every fact in nature should have been observed, on which a law has any bearing, before the law itself is laid down; and should facts subsequently discovered be inconsistent or opposed to it, the law must be discarded. It is then obvious, that

should we in our physical inquiries defer laying down any law until its universal application could be absolutely proved, physical science must remain a mass of insulated and unconnected facts, without order or beauty. On the other hand, it is evident that the establishment of laws from insufficient data must be avoided, as it exposes them to be overthrown by new discoveries, and tends to render the whole science mutable and uncertain.

But while the general truth of these positions is sufficiently obvious, their application to particular sciences requires some caution. The extent of an induction from which it may be permitted to deduce a law, varies, among other considerations, with the purpose to which, when established, it is intended to be applied. Where any assumed principle is to form the foundation of subsequent deduction, an error in such principle is augmented incalculably in the results. For instance, the law which regards the progressively increasing velocity of falling bodies, if false, must carry error into all the results into the calculation of which this element enters, or of which it is assumed as a basis. Thus it is, though in a less degree, with the doctrine of definite proportions in chemistry; being made the basis on which other laws are founded, the security of the superstructure is eminently dependent on the integrity of the foundation. It happens, however, in regard to these and other laws which are similarly employed, that they possess a certain mathematical accuracy and beauty which at once strike us as

the effect of design, and strongly recommend them to our attention; since if such a law did not generally exist, the chance of our meeting with particular facts in accordance with it would be exceedingly small. Most of the laws, indeed, which enter as elements into the calculations of the natural philosopher and the chemist, possess this rigorous and exact character.

Another class of laws may be mentioned, neither possessing the exactness of the last, nor equally applicable to the discovery of new truths, which are yet extremely useful for classing together facts which have a certain analogy to each other, to assist the memory in retaining them, and to direct attention to other facts either consistent or at variance with them. Such are the laws which have been noticed with regard to the various and fleeting forms of organized life. The facts in botany, zoology and anatomy, are so numerous, and the varieties of form and other physical properties so great, that the discovery of general laws tending to point out a method in these apparent irregularities, and to bring any degree of order out of so perplexing a mass, cannot be without advantage. In anatomy, properly so called, which though but a branch of one section of this extensive subject, forms so important a science from its intimate relation to our wants and necessities, the genius of the age has opened as it were an entirely new field of research and inquiry. Not content with describing the relation of contiguous parts, or with following out those which by continuity and

similarity of texture may be recognized as forming separate systems, modern anatomy has divided the whole body by a median line, and traced out the analogy of corresponding parts of each to the other; has brought together parts presenting a similar texture, that it might compare their relations to mechanical and chemical agents; has traced all possible analogies between form and use; has compared the texture and properties of the same part at every period, from a fetal state to old age; has again traced the same parts as they appear in the successive orders of animals, each being perfect in itself, up to man; and has compared the results of the two investigations, that in this manner also it might arrive at some general conclusion, and catch at some new design amid the apparently amorphous aspects of animal existence. Even the acknowledged aberrations of nature have been carefully watched, and what the practical observers of former times had termed monstrosity, has been already shown to be governed by certain laws, and to have certain very general if not immutable relations to the normal products of the living principle. In this great work, the glory of modern anatomy, the profound inquiries of Bichat took the lead; and that curious field of inquiry to which we last alluded, has recently been entered by a zealous laborer in the same department of science, the learned Geoffroy St. Hilaire. To those of our readers who are acquainted with the researches of this philosopher, it is unnecessary to mention the beauty of

the results which he has obtained; to others, perhaps, the following abstract of his views may not be unacceptable.

1. The first principle advanced by Geoffroy, in regard to monstrosities, is that these aberrations have a certain limit; there being many deformities which might easily be imagined, but which are not found to exist in nature. For example, we never observe the sacrum placed on the upper extremity of the spine, nor the urinary bladder transferred to the thorax; and although we find monsters destitute of head and upper extremities, while the organs of nutrition remain; yet the converse of this never occurs, so as to present a monster consisting of the head and upper extremities alone. Even in acephalous monsters we find the bones of the cranium in their rudimentary state, preserving the same connections as in their usual organization.

2. Many of these monstrous forms may be explained upon the principle of a retarded development of organs. Hence those parts of the organization which are the last completed, present the greatest number of anomalies. Thus we frequently find the foramen ovale open, because the structure by which it is closed is one of the last completed in the regular organization; and on the same principle the brain is oftener incomplete than the spinal marrow. Other examples of this law may be found in the lobular structure of the kidneys, and the permanent residence of the testes in the abdomen.

3. A remarkable law which has been observed in monsters from re-

tarded development, is, that the inequalities they exhibit often correspond to the regular forms in less perfect animals. The situation of the testicles in the abdomen is the natural arrangement of these parts in the inferior animals. The harelip is equally the regular condition of some period of embryo life in man, and of the adult state of some animals; while those cases in which the rectum opens into the urinary bladder, correspond in a remarkable degree to the organization of these parts in birds, which have the feces, urine and semen, received into a common cavity.

4. Another law, which M. Geoffroy calls the balancing of organs, explains many circumstances connected with the formation of monsters. According to this law, no organ can be excessively developed without a proportional diminution in the volume of some other. Of this there are many examples. In a case where the nasal bones were absent, the ascending processes of the superior maxillaries became so enlarged as to supply their place. When a deficiency of fingers occurs in one hand, the number is often increased in the other. In one instance, where only eleven ribs appeared on one side, thirteen were observed on the opposite. When the organ of smell is absent, the ethmoid is prolonged downward with its associated parts, while the two orbits are united, frequently exhibiting a single eye, which is larger than usual. This monstrosity occurs in many different degrees.*

* See Glasgow Med. Journ., No. 11.

We are aware that there exists in the minds of many persons a doubt as to the utility of speculations like the above, and a regret that the attention of modern anatomists should have been so much directed to the attainment of these general results, rather than to the accumulation of facts in which it is said all their real value consists. Why, it is asked, all this show of laws, and analogies, and coincidences, which are neither available for the discoveries of new facts, nor accurate expressions of those which have been already determined. Even those who do not, with a learned Scotch physiologist,* condemn general anatomy in toto, are yet extremely sceptical with regard to the labors of the modern French and German school of anatomy, and regard much of their speculation as visionary and useless. We confess ourselves of a different opinion. That some of the results thus obtained are erroneous, and many more of trifling importance, is highly probable; nor is the fact peculiar to this subject, that a little truth must be purchased at the price of much error. But

* "Mr. Cloquet's omission of what is called general anatomy, with all its absurd theories, its tiresome diffuseness, its verbosity and unprofitable minuteness, ought to be deemed by the student a great advantage and recommendation of the work; and should any one doubt this, let him peruse the first volume of the "*Manuel d'Anatomie Generale, descriptive et pathologique*, by J. F. Meckel," where he will find, under the title "*General Anatomy*," all the absurdities, without the good sense, contained in the "*Elementa Physiologiae* of Haller;" and in addition, more idle, extravagant, unintelligible theories, misnamed anatomical, than ever yet were collected into a single volume."—*Knorr's Preface to Cloquet's Anatomy.*

even were no permanent result obtained, and did the advantages of these researches, like those of the alchemists, consist wholly in facts independent of the main object of pursuit, their utility as excitements to these investigations cannot be disputed. The human mind is so constituted as never to rest contented with insulated facts, but to be constantly aspiring for more general deductions; and however in forming these the fancy may at times outstrip the judgment, still if the operation of the principle lead to increased ardor in the pursuit of truth, the progress of inquiry will be maintained, and the great interests of science eventually secured.

POISON FOOD.

THE French journals give us an account of a remarkable instance of acquired poisonous principle in a ham, not unlike, probably, that which is sometimes introduced into the stomach by cheese and other articles of accustomed food. A ham pie was purchased of a pastry-cook, and served the family of the purchaser for a dinner. Shortly after their luxurious repast, the master of the house was seized with general uneasiness, followed by cold sweats, shivering, violent pain in the stomach, and frequent vomiting. These symptoms were succeeded by burning thirst, extreme tenderness of the abdomen, profuse purging, and a distressing colic. Other families, who had been the same day customers to the pastry-cook, shared a similar fate. It was supposed by the medical attendants that the pies must

have acquired some carbonate of copper from the moulds in which they were baked. But on a very thorough chemical analysis of the different ingredients in the pies, and of the matters ejected by vomiting, none of this or any other poisonous substance could be detected. The experiments were very numerous, and afforded ample proof that the pies did not contain a trace of arsenic, copper, antimony, or lead. It was therefore concluded that the ham must have acquired, in some way or other, the poisonous properties sometimes remarked in other articles of food, such as the German sausages, cheese, milk, &c. Those properties are known only by their effects on the living system. They have, in every instance which has come to our knowledge, eluded the search of the chemist; nor are there any other means afforded us of perceiving their presence.

HORNS IN THE HUMAN SUBJECT.

THE growth of horns from different parts of the human body, has been, from the earliest times, a subject for curious examination, for record, and for theorising. That true cornuous excrescences do sometimes shoot out from the surface of the body is universally known; but various have been the opinions respecting the true nature and origin of the disease. Some have supposed them to be enlargements of indurated sebaceous glands; others have accounted them as species of warts or corns; some have thought them to have their seat and origin in cellular tissue; and still others have held that such struc-

tures rise out of the bones, and are a morbid secretion of morbid osseous matter. We recollect to have seen but two cases of this disease in which it existed to any considerable degree. One was in an aged female in the Hospice de l'Ecole de Medecine at Paris. The morbid structure was a true horn, as shown by its external appearance, and by a closer examination of a portion which we removed with a penknife. It was situated on the upper part of the forehead; its base was about two inches in diameter, and it rose about the same distance above the cutaneous integument. In this case the horn appeared to be so connected with the parts below it, that it could not be moved, and appeared, if not arising out of, to be closely attached to, the bone or periosteum.—The other case alluded to was also in an aged female, in this city; and here the excrescence came up from the extremity of one of the toes, rose to about one inch in height, and curled over like the horn of a ram.

A committee of the French Academy of Medicine has been lately occupied in investigating this subject, and have succeeded in collecting the records of 71 cases; 31 in males, 37 in women, and 3 in young children. In 9 cases, they were on the head; in 3, on the forehead (one of those undoubtedly that we have described); in 12, on the thigh; in 3, on the temple; in 5, on the nose;

in 2, on the cheek; in 1, on the jaw; in 4, on the chest; in 4, on the back; in 3, on the penis; in 1, on the os ischium; in 2, on the knee and calf; in 1, on the leg; and in 2, on the feet. They also refer to the history of one young woman, in whom "horns grew so fast from every part of the body, more particularly the joints, that at twelve years of age she was covered with them. Some of these productions were twisted like ram's horns, and when any fell off, others grew in their place. A horn two or three inches in length grew from the end of each finger—a somewhat formidable appendage to a lady's hand."

This committee are of opinion that in all these cases the disease existed in the skin or mucous membrane, and account these as the only textures subject to the disease.

LONDON UNIVERSITY.

EVERY week brings forth changes at this institution. Mr. C. Bell has resigned the Professorship of Surgery, and Mr. Pattison has been appointed in his place. Mr. Pattison retains, also, the Anatomical Chair conjointly with Mr. Bennet.

WE would advise the author of the communication "against busts and tight lacing" to seek for laurels in some other field than that of literature or science.

Whole number of deaths in Boston the fortnight ending November 5th, 45. Males, 19,—Females, 25. Stillborn, 1.

Of consumption, 8—croup, 5—unknown, 7—dysentery, 1—dropsy on the brain, 2—infantile, 1—paralysis, 1—fever, 1—teething, 2—hooping cough, 1—convulsions, 2—typhous fever, 2—canker, 1—smallpox, 1—disease of the heart, 1—sudden, 1—apoplexy, 1—lung fever, 1—inflammation of the bowels, 1—ulcer, 1—mortification, 1—suicide, 1.

ADVERTISEMENTS.

PRIVATE MED. SCHOOL.

THE subscribers have associated for the purpose of giving a complete course of private Medical Instruction, and the following arrangements are now in operation :—

The pupils are admitted to the practice of the Mass. General Hospital, and receive Clinical Lectures on the cases from Drs. Jackson, Channing and Ware.

Private Lectures, with examinations, are given in the intervals of the public lectures of the University.

On Midwifery and the Diseases of Women and Children, and on Chemistry, by Dr. CHANNING.

On Physiology, Pathology and Therapeutics, by Dr. WARE.

On the Principles and Practice of Surgery, by Dr. OTIS.

On Anatomy, Human and Comparative, by Dr. LEWIS.

Private Instruction will be given in Practical Anatomy, by means of demonstrations and dissections.

Such students as may be disposed, will have opportunity of acquiring a knowledge of Practical Pharmacy.

Rooms for all the purposes contemplated, have been provided in a convenient and central situation.

Application to be made to Dr. WALTER CHANNING.

JAMES JACKSON,
WALTER CHANNING,
JOHN WARE,
GEORGE W. OTIS, Jr.
WINSLOW LEWIS, Jr.

July 6.

12t.

SURGEON DENTIST'S MANUAL.

JUST received, by CARTER & HENDEE, The Surgeon Dentist's Anatomical and Physiological Manual. By G. WAITE, Member of the Royal College of Surgeons. Nov. 2.

NEURALGIC DISEASES.

A TREATISE on Neuralgic Diseases, dependent upon Irritation of the Spinal Marrow, and Ganglia of the Sym-

pathetic Nerve. By THOMAS PRIDGIN TEALE, Member of the Royal College of Surgeons in London, &c. Just received by CARTER & HENDEE. Nov. 2.

SURGICAL INSTRUMENTS AND CHEMICALS.

STUDENTS in want of the above articles, would do well to call, before purchasing, at BREWER & BROTHERS', Nos. 90 and 92 Washington Street—Boston.

Oct. 15.

ep3m

VACCINE VIRUS.

NATHAN JARVIS, on account of frequent solicitations, will constantly keep for sale FRESH VACCINE VIRUS, taken by a physician from healthy subjects. It will be furnished at a reasonable price on demand, either in scabs or quills. Physicians in the country who are in want of Virus, can send their orders by mail, as it can be enclosed in a letter and transmitted without any great expense of postage. June 1.

Apothecaries' Hall,
No. 189 Washington Street.

GERMAN LEECHES.

RICHARD A. NEWELL, Druggist, Summer Street, respectfully informs the Physicians and Public generally, that he has just received a fresh supply of the above-named *Leeches*, which will be sold at a fair price.

N. B.—Leeches sent to any part of the city, and applied, without extra charge, by day or by night. 6w—Nov. 8.

HENNEN'S MIL. SURGERY.

THIS day received, by CARTER & HENDEE, Principles of Military Surgery; comprising Observations on the Arrangement, Police, and Practice of Hospitals, and on the History, Treatment, and Anomalies, of Variola and Syphilis. Illustrated with Cases and Dissections. By JOHN HENNEN, M.D. F.R.S.E. Inspector of Military Hospitals. First American, from the third London Edition. With a Life of the Author, by his Son, Dr. John Hennen. July 13.

Published weekly, by JOHN COTTON, at 184, Washington St. corner of Franklin St., to whom all communications must be addressed, *postpaid*.—Price three dollars per annum, if paid in advance, three dollars and a half if not paid within three months, and four dollars if not paid within the year. The postage for this is the same as for other newspapers.